FOAMGLAS® Insulation

Architecture and Sustainability for Museums

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FOAMGLAS®
Building

Label of Excellence for the International Community of Museums

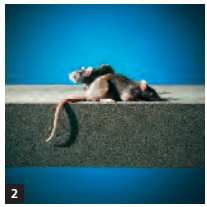
Why the world's leading museums choose FOAMGLAS®

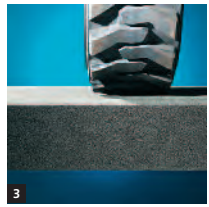
Renowned architects rely on quality building materials when designing museums. This is for a good reason, as a museum collects, maintains and preserves precious art and artefacts of cultural heritage.
Therefore the demands on quality, safety and service life in such buildings are extremely high. FOAMGLAS® cellular glass insulation meets these stringent requirements regarding building physics and indoor air quality.
FOAMGLAS® has unique advantages over "conventional insulation" materials as it is made of millions of hermetically sealed glass cells, hence making it completely waterproof and vapour-tight. The cell structure provides high compressive strength and since it is made of pure glass, it is totally non-combustible, rot-proof, resistant to acids and resistant to attacks from insects and rodents. Although being such a tough material, cellular glass is actually easy to cut, allowing FOAMGLAS® insulation to be customized to any shape of roof or building.

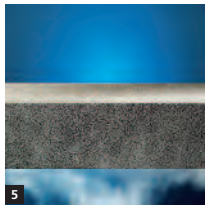
Environmental stewardship - a guiding principle

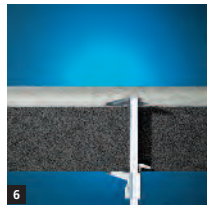
Ecology is a top priority during the manufacturing of FOAMGLAS® – using over 60 % recycled glass and energy sourced from renewable supplies.
As thermal ageing does not affect the product, the principles of sustainability are followed right from the start. From this point of view, FOAMGLAS® insulation can withstand the test of time.
FOAMGLAS® meets the most stringent health and environmental criteria during its lifetime. It does not contain any blowing agents or flame retardants, which may emit air pollutants or generate toxic smoke when involved in a fire. That is why FOAMGLAS® insulation has been certified by all the major ECO-labels and institutions around the world, including nature plus®, considered label of excellence as a green building product. This quality mark is only awarded to products that meet the highest standards of health and environmental stewardship.

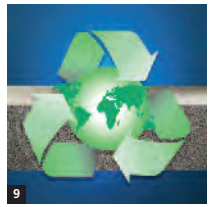
FOAMGLAS® Performance Properties











1 Waterproof FOAMGLAS® is waterproof because it consists of pure glass.

2 Pest-proof FOAMGLAS® cannot rot and is pest-proof because it is inorganic.

3 Compression-proof FOAMGLAS® has an extraordinarily high compressive strength without deformation under load due to its unique cell geometry.

4 Non-combustible FOAMGLAS® will not burn because it consists of pure glass. Fire behaviour: Classification according to EN 13501: A1.

5 Vapour-tight FOAMGLAS® is air- and vapour-tight because it consists of hermetically sealed glass cells.

6 Dimensionally stable FOAMGLAS® is dimensionally stable because glass neither shrinks nor swells.

7 Acid-resistant FOAMGLAS® is resistant to organic solvents and acids because it consists of pure glass.

8 Easy to cut FOAMGLAS® is easy to work with because it consists of thin-walled glass cells.

9 Ecological FOAMGLAS® is free of environmentally damaging flame retardants and blowing agents, no relevant eco-toxic components. FOAMGLAS® can help meet your LEED and Living Building Challenge™ projects.

Museums trust in FOAMGLAS®

Firstsite Centre for Visual Arts, Colchester, UK
Raphael Viñoly, New York
2011
Roof and façade, FOAMGLAS® READY BOARD and FOAMGLAS® W+F

World-renowned architect Rafael Viñoly has given Colchester's Visual Arts Centre – Firstsite – a resilient FOAMGLAS® cellular glass insulation solution with a wonderful golden glow.
The envelope of the building is a quite intricate layered system. The roof is insulated with FOAMGLAS® READY BOARD. FOAMGLAS® W+F slabs were applied to the façade in combination with Tecu Gold sheets, of which were seamed and fixed into position using metal plate PC® SP 150/150 technology. The system allows to minimize thermal bridges. Tecu Gold standing seam sheets are a copper aluminum alloy by KME. A distinctive feature of the building is that the angles of the standing seams alternate from bay to bay, so that the seams zigzag their way across the face of the building. These seams wrap around the parapet and flow across the roof.

phaeno Science Centre, Wolfsburg, Germany
Zaha Hadid, London; Roland Mayer/P. Max. Bährle, Lörrach
2003-2005
Walls and ceilings, interior insulation with FOAMGLAS® T4+
Roofs with FOAMGLAS® T4+

As a world-premiere, self-compacting concrete was used for a project of this dimension. Since all surfaces to be insulated were inclined or rounded, an insulation material needed to be used that could be fitted to any form or curvature.
FOAMGLAS® cellular glass is the material that can easily be cut to form any shape. Regardless the outline of the sub-construction, FOAMGLAS® blocks were bonded and fixed with optimum adherence. Cellular glass insulation blocks can be adjusted by abrasion to the final design. As interior insulation the material perfectly complies with the massive wall structure. It is suited for render and f.i. fine finish PC® 140. The composition of the walls meets non-combustibility requirements, which have become the accepted standard for museums and public buildings.

Qatar National Museum, Doha, Qatar
Ateliers Jean Nouvel, Paris
2010 - under construction
Roofs and building envelope, FOAMGLAS® insulation
FOAMGLAS® READY BOARD, FOAMGLAS® FLOOR BOARD

The architect's design is made up of a series of interlocking disks with cavities inside, buffered from the hot desert sun. The new museum will be built around a historic structure, the Fariq Al Salatah Palace, and will have new exhibitions about the life in the Gulf region. The entire complex will seek LEED Silver certification, relying mostly on traditional building practices to create shady and cool areas with thermal buffer zones. Behind the GRC cladding, which are hollow core units, 200 mm thick FOAMGLAS® is used as thermal protection; it guarantees steady interior conditions, which are essential for the artworks. FOAMGLAS® cannot absorb any water due to the closed cell structure and builds a strong subconstruction for the waterproofing membranes. The artworks and the building are protected from the desert heat at its best.

Museum of Islamic Art, Doha, Qatar
Architect I.M. Pei
Construction 2007
Façade and flat roof, FOAMGLAS® insulation

The Museum of Islamic Art is situated on the southern part of Doha's seafront, on a man-made island about 60 meters off the coast of Doha. The external wall of the museum is finished with 6,500 m^3 of natural stone work. High temperature, combined with high humidity, and open joints in the façade required a high quality structure, including the thermal insulation behind the stone cladding because access to the ventilation space is not provided after completion.
FOAMGLAS® insulation with a closed cell structure guarantees a lifetime solution because it can never absorb any humidity, neither from humid air nor from rain or condensation. Performance for life is ensured and any upgrading of HVC-equipment will not be required in the future.

Astrup Fearnley Museet, Oslo, Norway
Renzo Piano
1996-2001
Special roof, FOAMGLAS® BOARD insulation

A number of strong arguments for using FOAMGLAS® BOARD elements:

- Prefabricated components ensure short construction times without the need of drying out.
- Excellent energy saving due to high thermal resistance, consequently avoiding thermal bridges and reduction of the ecological footprint (greenhouse gases).
- Quality and ecologically sustainable construction.
- Initial thermal conductivity is maintained for life.
- Airtight, windproof and downpour-proof (DIN 18542) construction, which keeps infiltrations and condensation out (condensation risk calculation).
- Noncombustible insulation.
- Easy maintenance and low maintenance costs.

IAACC Pablo Serrano Museum, Saragossa, Spain
José Manuel Pérez Latorre
2010
Timber deck, FOAMGLAS® READY BLOCK
Finish, Composite panel cladding

The Pablo Serrano Museum, located in the old workshops of the Provincial Orphanage, was refurbished by architect José Manuel Pérez Latorre to suit the new role as a museum dedicated to Aragonese paintings and sculptures. The space of the new, extended building is amazing, with its volume being increased from 2 500 m^2 to 7 500 m^2. It was furthermore enhanced by an unusual confined area incorporating an external light enclosure, of which was tinted by a special colour to make it look like "a precious stone reflecting the sky."
FOAMGLAS® has been chosen as insulation on timber panels behind a ventilated rainscreeen cladding because it can ensure dimensional stability and reliable performance in the long-term.

Porsche Museum, Stuttgart, Germany
Delugan Meissl Associated Architects, Vienna
2005-2009
Compact Roof, FOAMGLAS® TAPERED blocks

The building with a total floor area of 21,000 m², consists of a so-called basement comprising four floors, two of them below grade. Above the base construction three components raise upwards, one of them is the elevator shaft and two Y-shape buttresses. These support structures bear 35,000 tons of the main exhibition building. This structure hovers like a bridge with 16 m at the highest point. This 150 m long floating build comprises a steel structure with a total building mass of 5,500 tons.
It has spans up to 60 meters between the supports and cantilevers up to 45 meters.
FOAMGLAS® TAPERED insulation has been chosen for all decks and roofs to improve thermal insulation and rainwater runoff.

Hans Arp Museum, Remagen-Rolandseck, Germany
Richard Meier, New York
2007
Compact roofs, FOAMGLAS® T4+ and
FOAMGLAS® TAPERED ROOF system

The road to the Hans Arp Museum became part of the museum's design. "*You enter Rolandseck station, go down into the tunnel, take the lift to the top, cross the bridge and enter the museum*", description of architect Richard Meier about his design of the Arp Museum in Remagen-Rolandseck.
All flat roofs – including the spacious terraces – are built as FOAMGLAS® Compact Roofs, using blocks or FOAMGLAS® TAPERED insulation. FOAMGLAS® roofs are resilient constructions that ensure thermal and moisture protection, and can be designed for high point and surface loading. The system is conceived as a safe barrier to infiltrations and the insulation forms a stable subconstruction, free from deformation.

Didymoteichon Museum, Thrace, Greece
MEAS SA, P. Petrakopoulos, E. Digonis & Associates, Athens
2008
Below grade and external wall insulation
under heavy cladding, FOAMGLAS® T4+

The region of Didymoteichon has presented historical findings since the Neolithic age. The city itself was important throughout the Hellenistic, Roman, Byzantine, Ottoman regimes and also during Modern Greek history.
The construction of this new museum aims to enhance local cultural life and bring to light the importance of the region throughout history.
FOAMGLAS® cellular glass is applied to insulate roofs, walls and below grade to protect the building and the exhibits from extreme temperatures, which are not unusual in northern regions.

UNARTE, Art & Architecture School, Puebla, Mexico
Architects, TAGLE; Award for environmental design
Project architect, José Ramón Tagle (AKF), Mexico City
2013
Roofs, concret and steel decks, FOAMGLAS®

The project Architype-UNARTE is a response to the need of university workshops, study rooms and an art gallery. The purpose of this project was to serve as a model that reflects the commitment of UNARTE to art and education.
This project is unique because FOAMGLAS® is used in the entire roof, some parts of the concrete deck, some sections of the steel deck with metal cladding on top and a small green roof. The project was certified LEED Platinum.

Carpet Museum, Baku, Republic of Azerbaijan
Hoffmann - Janz ZT GmbH, Vienna
2009-2012
Special roof, FOAMGLAS® READY BOARD
Cladding, Alucobond® Gold

The new Carpet Museum in Baku is designed by the Austrian architect Erich Janz and stands out for its unusual shape: a roll of carpet. To protect the valuable exhibits with added security, the curved steel roof has been insulated with FOAMGLAS®. Cellular glass insulation stands for building resilience. The bonded insulation blocks stiffen the trapezoidal deck and reduce vibration and deflection. The roof is cladded with Alucobond® elements, of which fit like a second skin to the outline of the building.
Curved roof shapes are demanding and complex structures. Independently of whether the substrate is straight or curved, FOAMGLAS® can be installed with an optimum adherence to the subconstruction. FOAMGLAS® is easily adjusted to any shape of building.

Louvre Museum, Dep. of Islamic Art, Paris, France
Mario Bellini Architects S.r.l., Milano;
Rudy Ricciotti, Bandol, France
2012
Below grade sub-slab insulation, FOAMGLAS® S3

The extension for the Department of Islamic Arts at the Musée du Louvre in Paris is covered by an undulating golden plane blanket – as if "suspended in the wind." Tessellated glass triangles create the self-supporting curves of the roof and are sandwiched between two sheets of anodized aluminum mesh to create a golden surface, both inside and out.
The new gallery wing is surrounded by the neoclassical façades of the museum's Visconti courtyard and has two of its three floors submerged beneath the ground.
The architects specified for compression-proof FOAMGLAS® blocks for below grade sub-slab insulation. They are an efficient barrier against dampness and capillary moisture. Thermal insulation ensures a steady indoor climate for a top quality usage.

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